Figure 1.

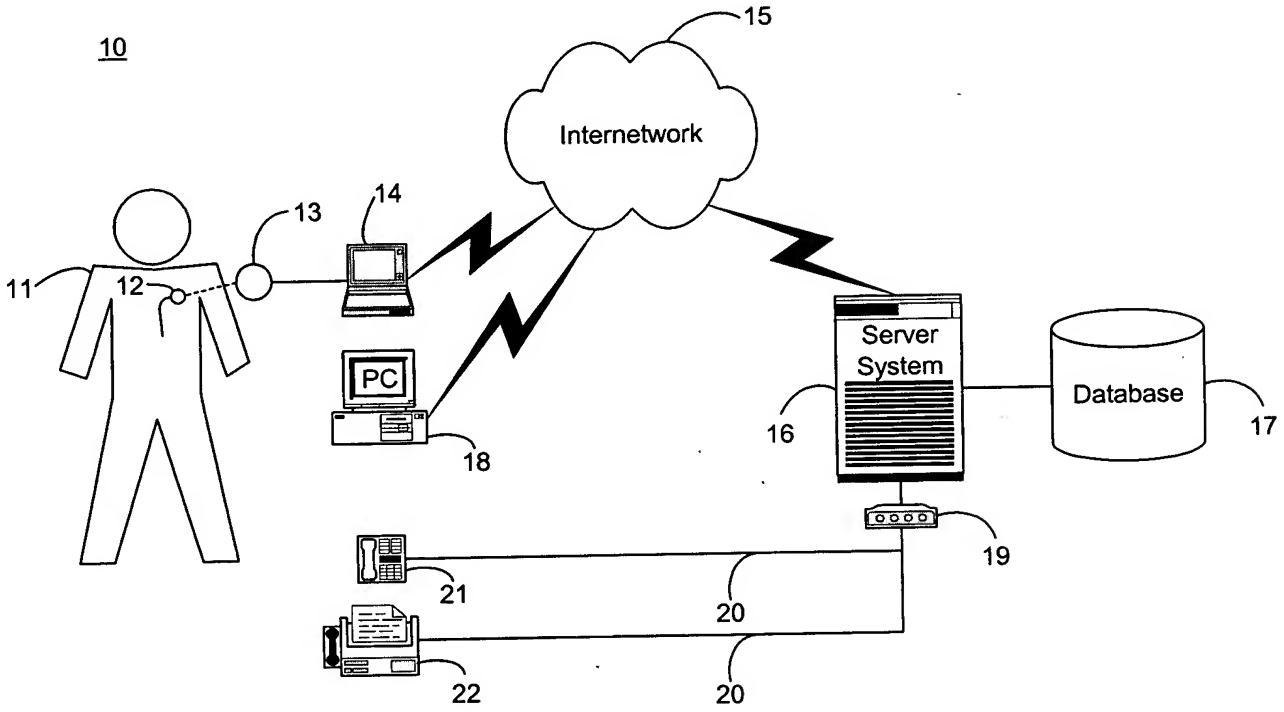

10
15
Internetwork
14
13
11
12
PC
18
Server
System
16
Database
17
19
21
20
22
20

Figure 2.

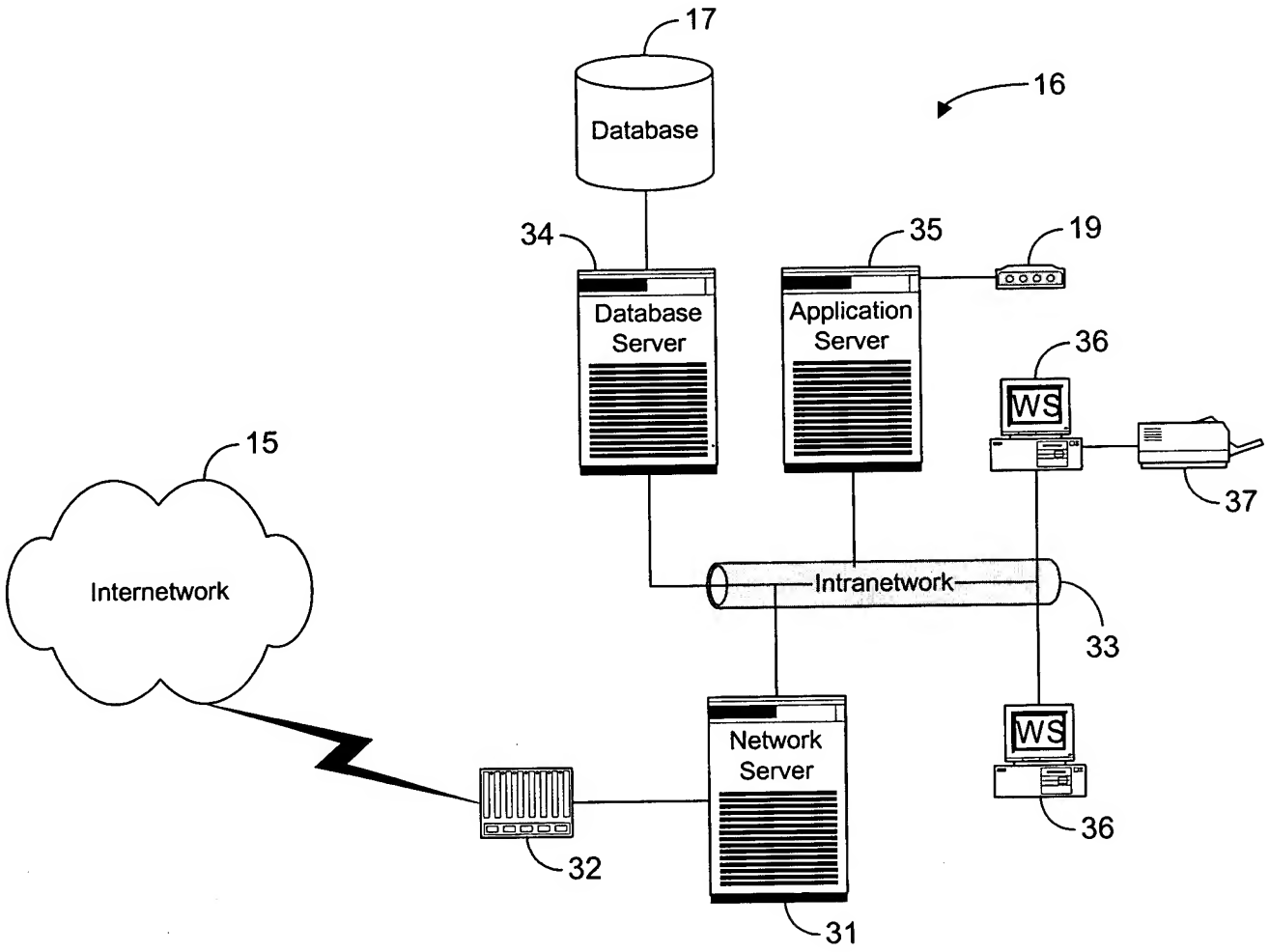

17
Database
16
34
35
19
Database Server
Application Server
36
WS
15
37
Internetwork
Intranetwork
33
Network Server
WS
36
32
31

Figure 3.

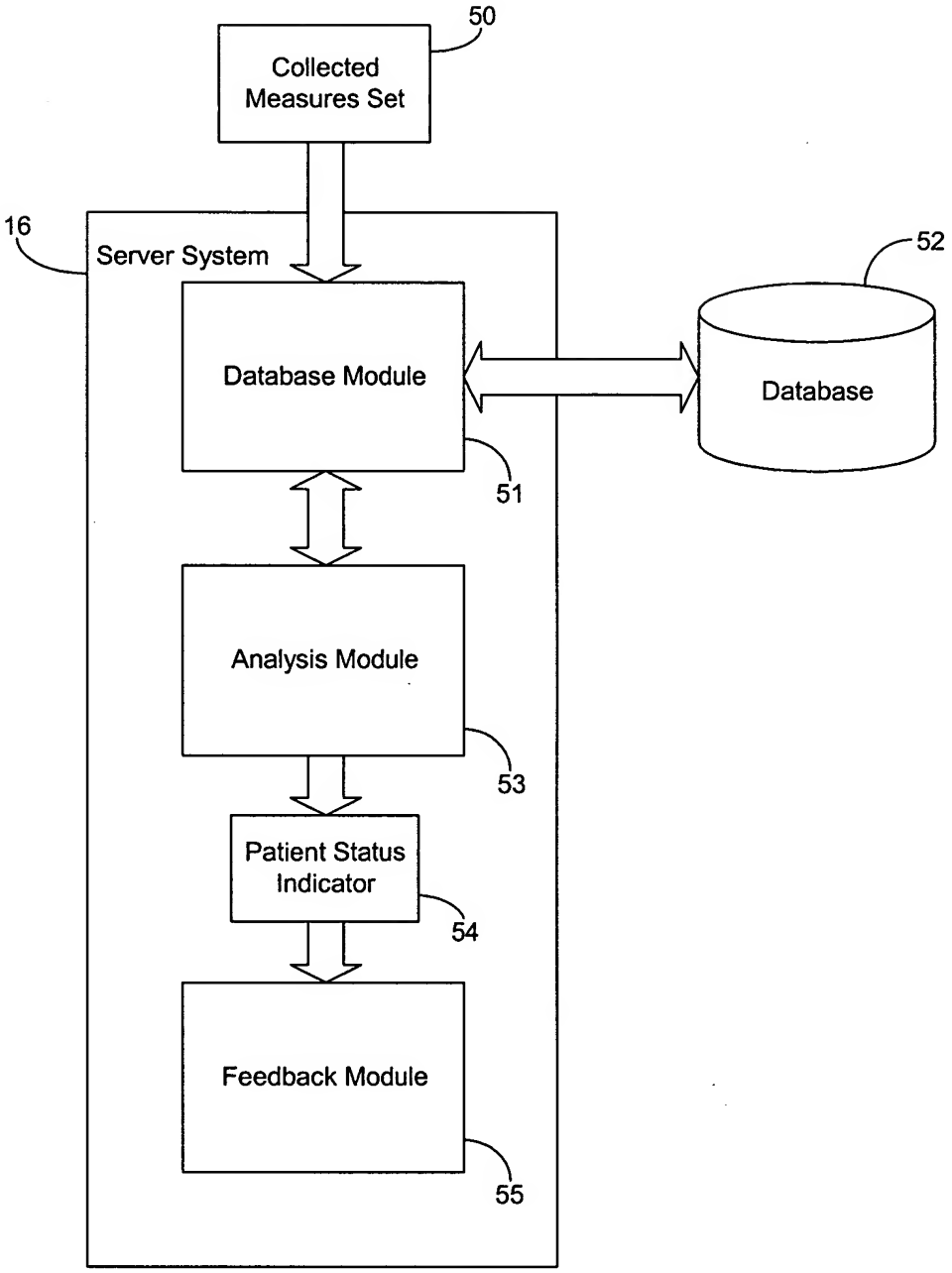

50
Collected Measures Set
16
Server System
52
Database Module
Database
51
Analysis Module
53
Patient Status Indicator
54
Feedback Module
55

Figure 4.

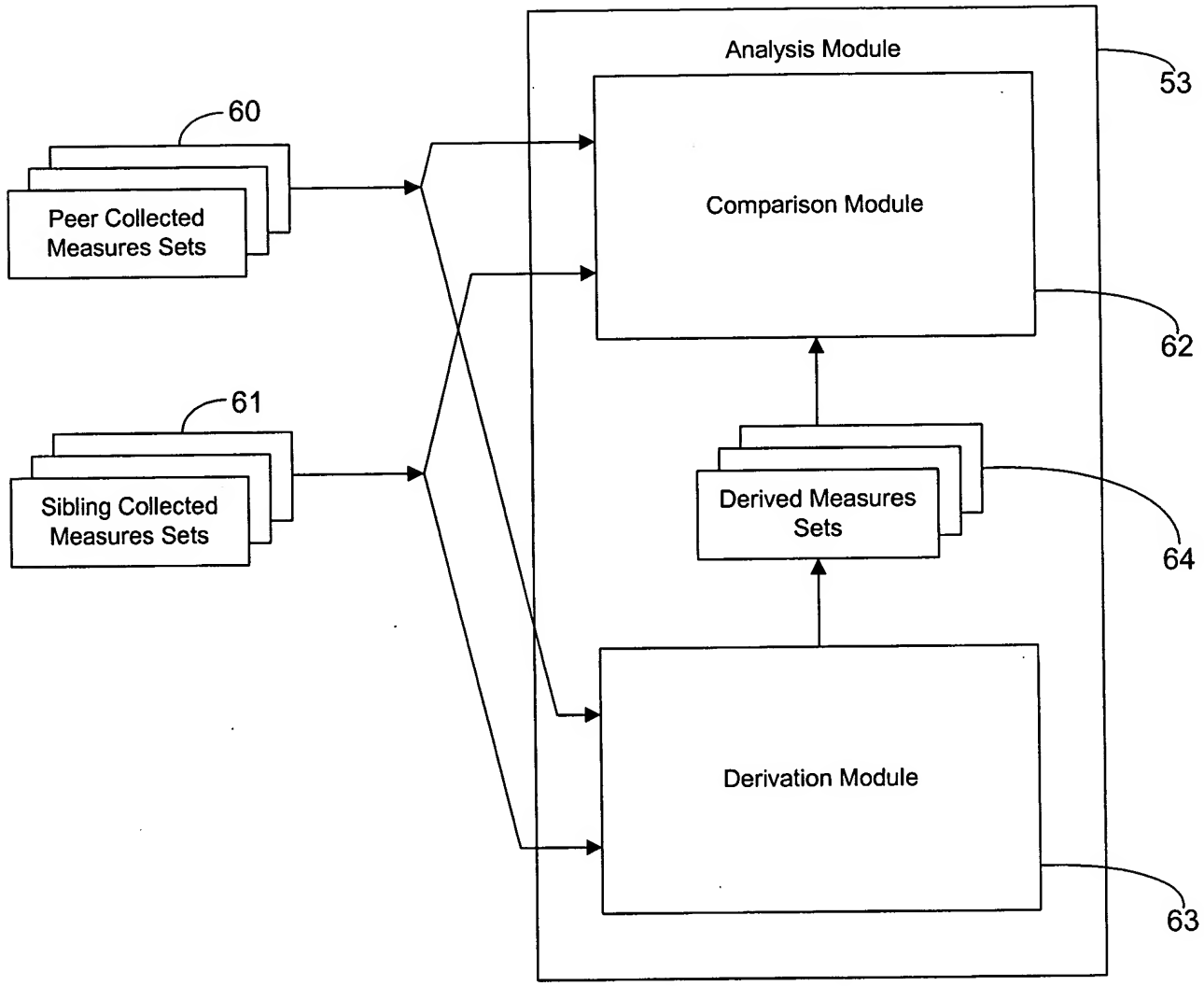

Analysis Module
53
60
Peer Collected Measures Sets
Comparison Module
62
61
Sibling Collected Measures Sets
Derived Measures Sets
64
Derivation Module
63

Figure 5.

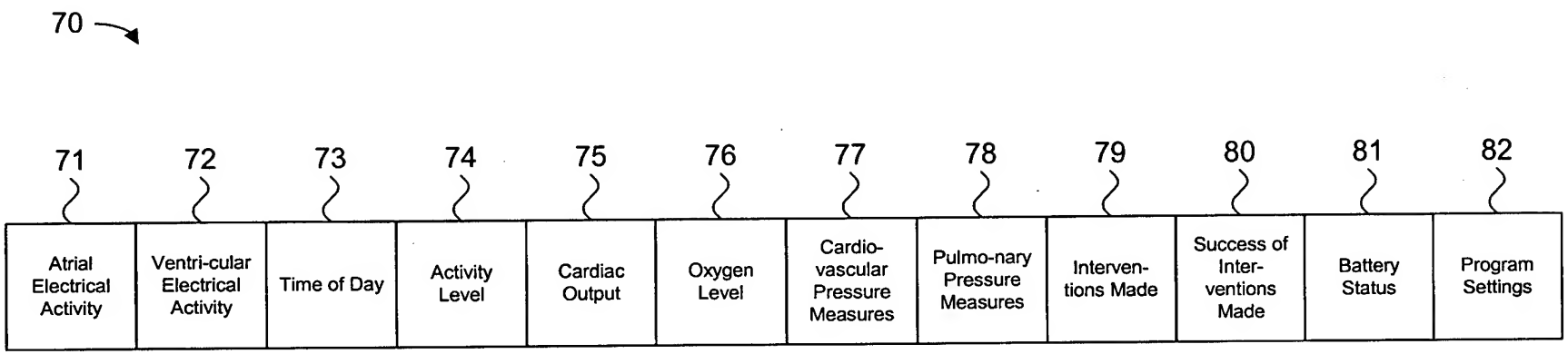

70
71
Atrial Electrical Activity
72
Ventri-cular Electrical Activity
73
Time of Day
74
Activity Level
75
Cardiac Output
76
Oxygen Level
77
Cardio-vascular Pressure Measures
78
Pulmo-nary Pressure Measures
79
Interven-tions Made
80
Success of Inter-ventions Made
81
Battery Status
82
Program Settings

Figure 6.

Patient 1

Set 0				Set n-2	Set n-1	Set n
X_0	•	•	•	X_{n-2}	X_{n-1}	X_n
Y_0	•	•	•	Y_{n-2}	Y_{n-1}	Y_n
Z_0	•	•	•	Z_{n-2}	Z_{n-1}	Z_n

time →

Patient 2

Set 0				Set n-2	Set n-1	Set n
$X_{0'}$	•	•	•	$X_{n-2'}$	$X_{n-1'}$	$X_{n'}$
$Y_{0'}$	•	•	•	$Y_{n-2'}$	$Y_{n-1'}$	$Y_{n'}$
$Z_{0'}$	•	•	•	$Z_{n-2'}$	$Z_{n-1'}$	$Z_{n'}$

time →

Patient 3

Set 0				Set n-2	Set n-1	Set n
$X_{0''}$	•	•	•	$X_{n-2''}$	$X_{n-1''}$	$X_{n''}$
$Y_{0''}$	•	•	•	$Y_{n-2''}$	$Y_{n-1''}$	$Y_{n''}$
$Z_{0''}$	•	•	•	$Z_{n-2''}$	$Z_{n-1''}$	$Z_{n''}$

time →

Figure 7.

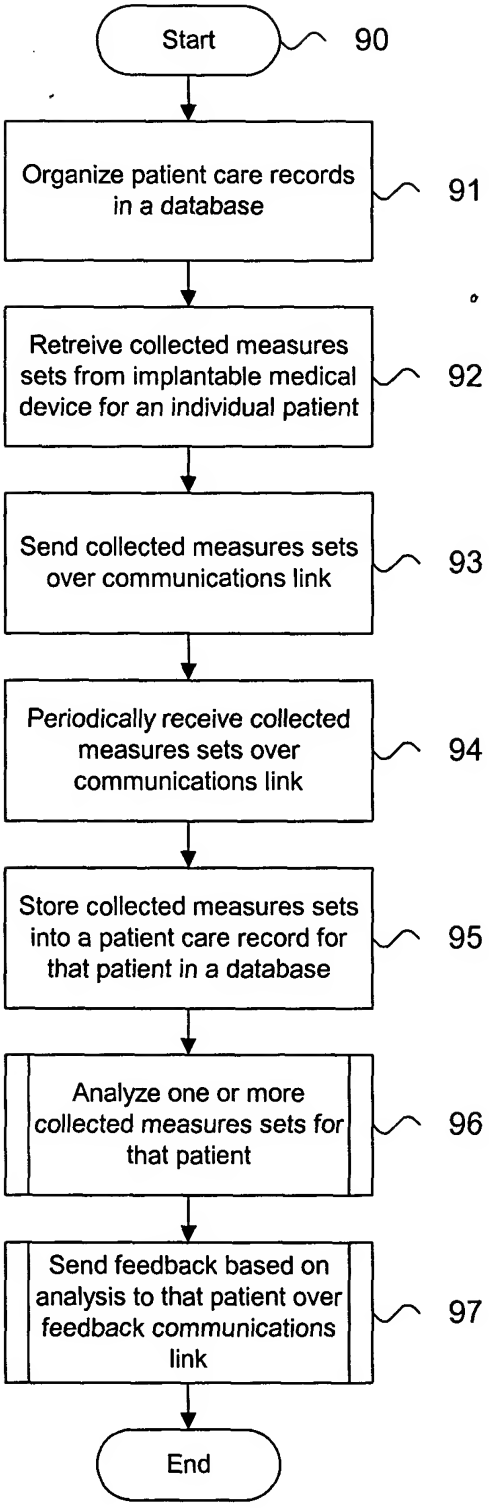

Start
90
Organize patient care records in a database
91
Retreive collected measures sets from implantable medical device for an individual patient
92
Send collected measures sets over communications link
93
Periodically receive collected measures sets over communications link
94
Store collected measures sets into a patient care record for that patient in a database
95
Analyze one or more collected measures sets for that patient
96
Send feedback based on analysis to that patient over feedback communications link
97
End

Figure 8.

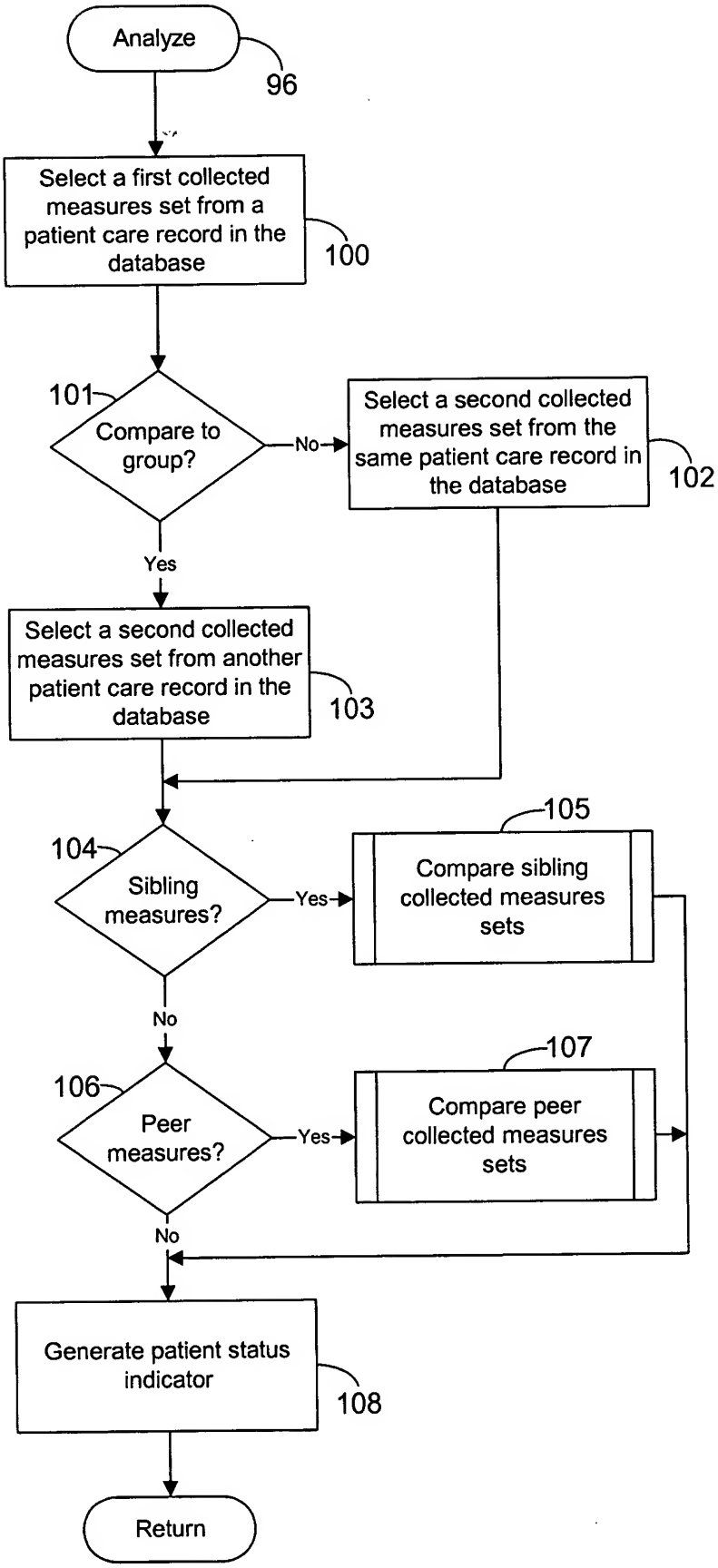

Analyze
96
Select a first collected measures set from a patient care record in the database
100
101
Compare to group?
No
Select a second collected measures set from the same patient care record in the database
102
Yes
Select a second collected measures set from another patient care record in the database
103
104
Sibling measures?
Yes
105
Compare sibling collected measures sets
No
106
Peer measures?
Yes
107
Compare peer collected measures sets
No
Generate patient status indicator
108
Return

Figure 9.

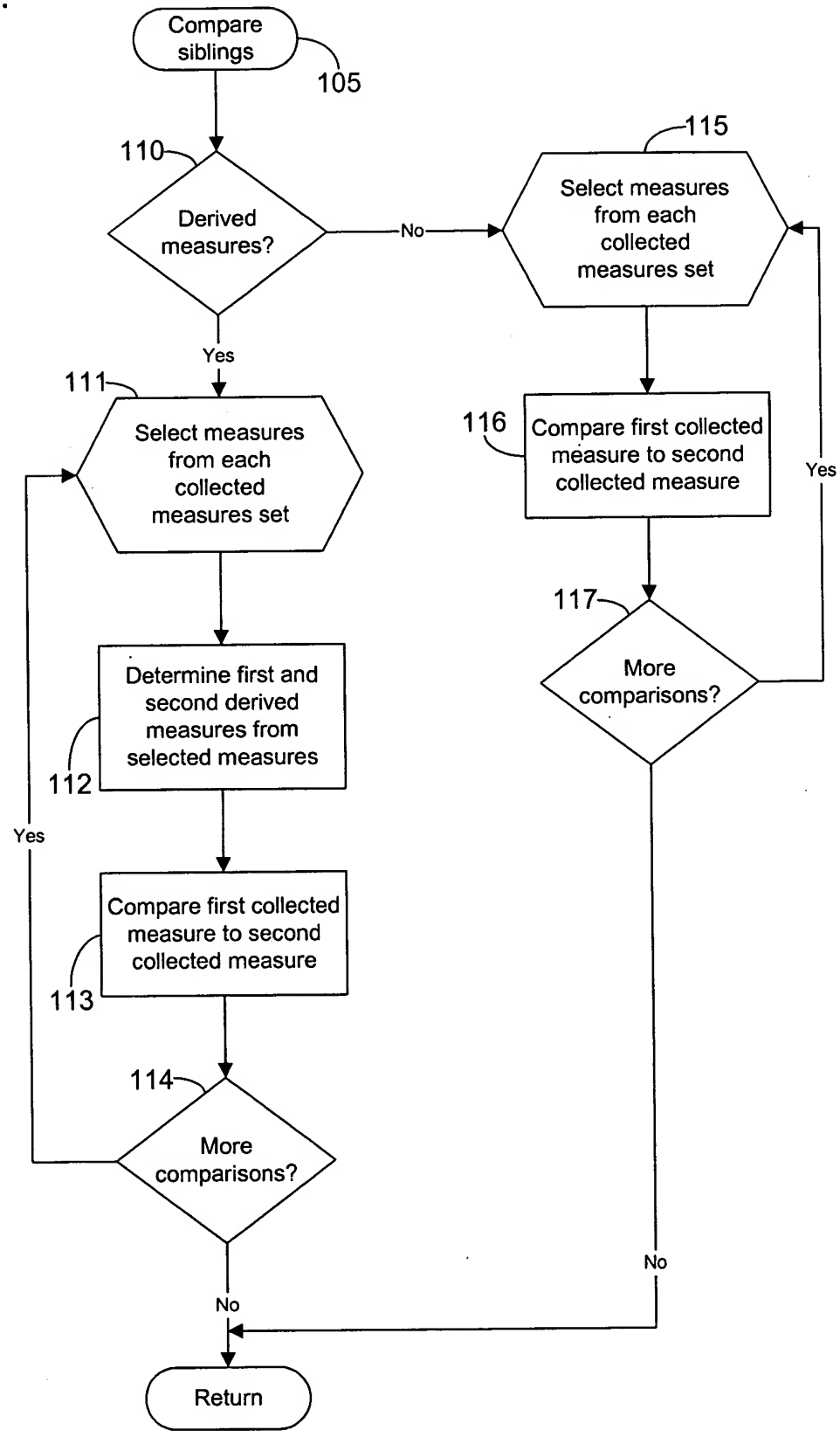

Compare siblings
105
110
Derived measures?
No
115
Select measures from each collected measures set
Yes
111
Select measures from each collected measures set
116
Compare first collected measure to second collected measure
Yes
117
More comparisons?
Determine first and second derived measures from selected measures
112
Yes
Compare first collected measure to second collected measure
113
114
More comparisons?
No
No
Return

Figure 10A.

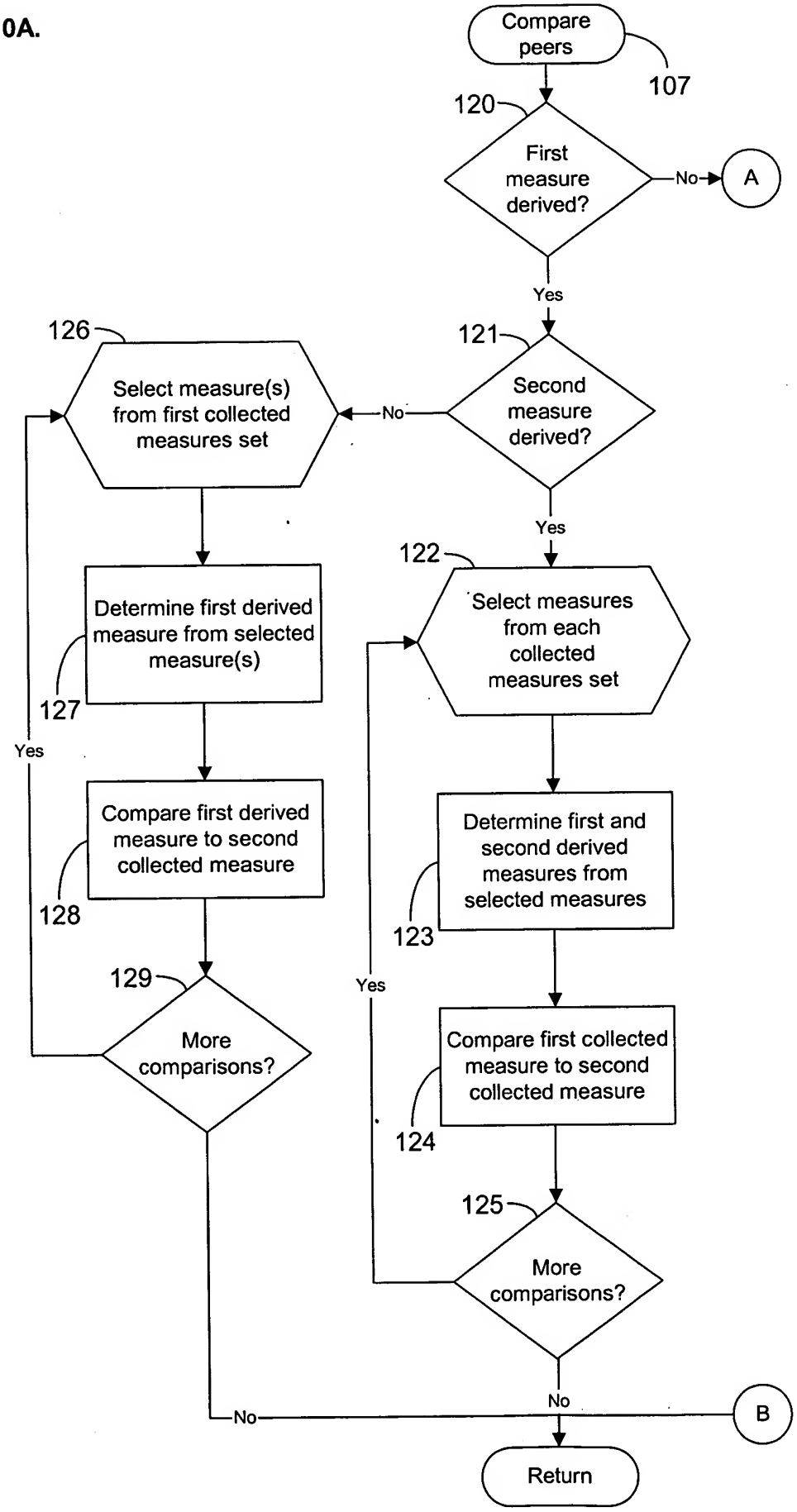

Compare peers
107
120
First measure derived?
No
A
Yes
121
Second measure derived?
No
126
Select measure(s) from first collected measures set
Yes
122
Select measures from each collected measures set
Determine first derived measure from selected measure(s)
127
Compare first derived measure to second collected measure
128
129
More comparisons?
Yes
Yes
Determine first and second derived measures from selected measures
123
Compare first collected measure to second collected measure
124
125
More comparisons?
No
No
B
Return

Figure 10B.

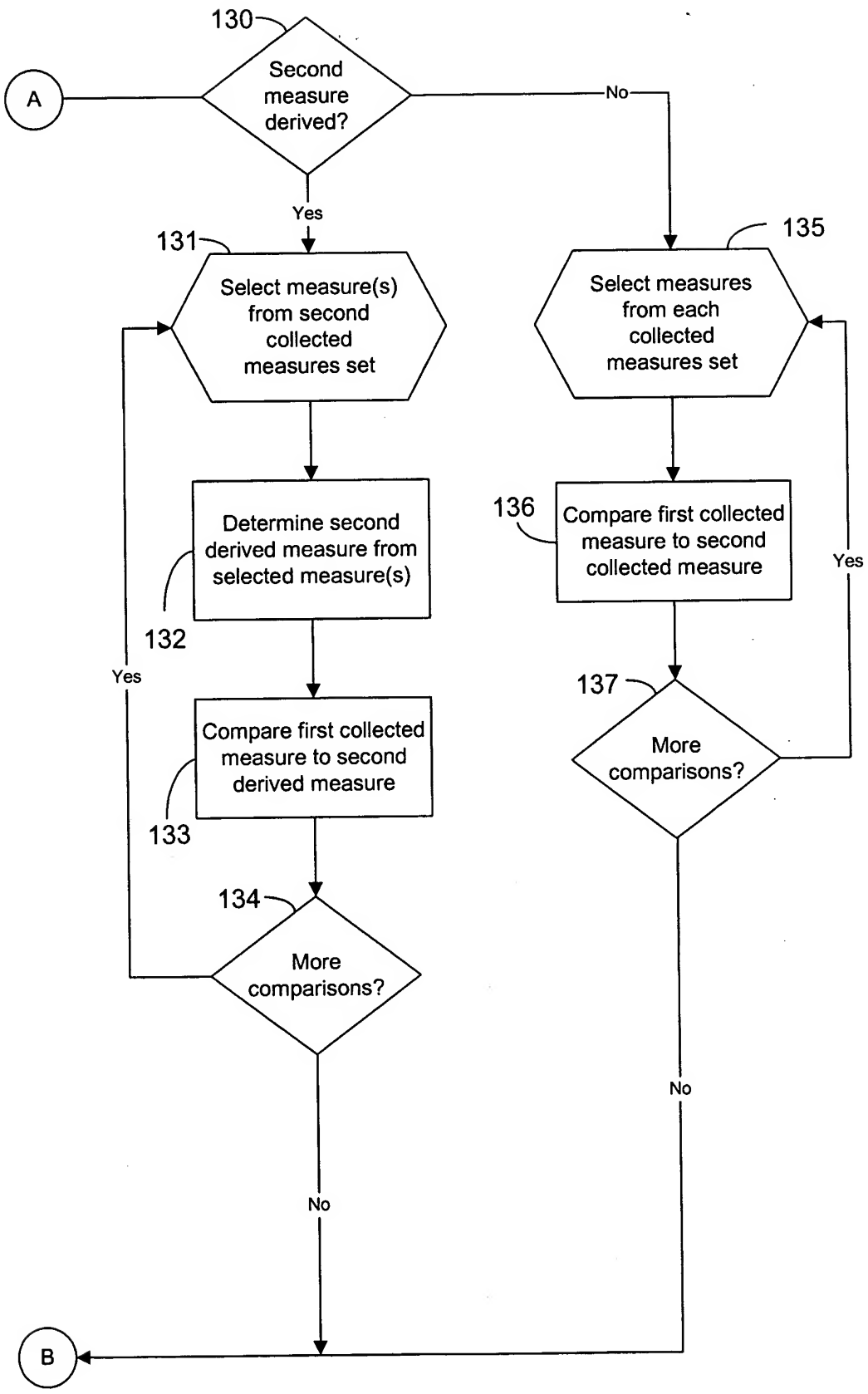

130
Second measure derived?
A
No
Yes
131
Select measure(s) from second collected measures set
Determine second derived measure from selected measure(s)
132
Compare first collected measure to second derived measure
133
134
More comparisons?
Yes
No
135
Select measures from each collected measures set
136
Compare first collected measure to second collected measure
137
More comparisons?
Yes
No
B

Figure 11.

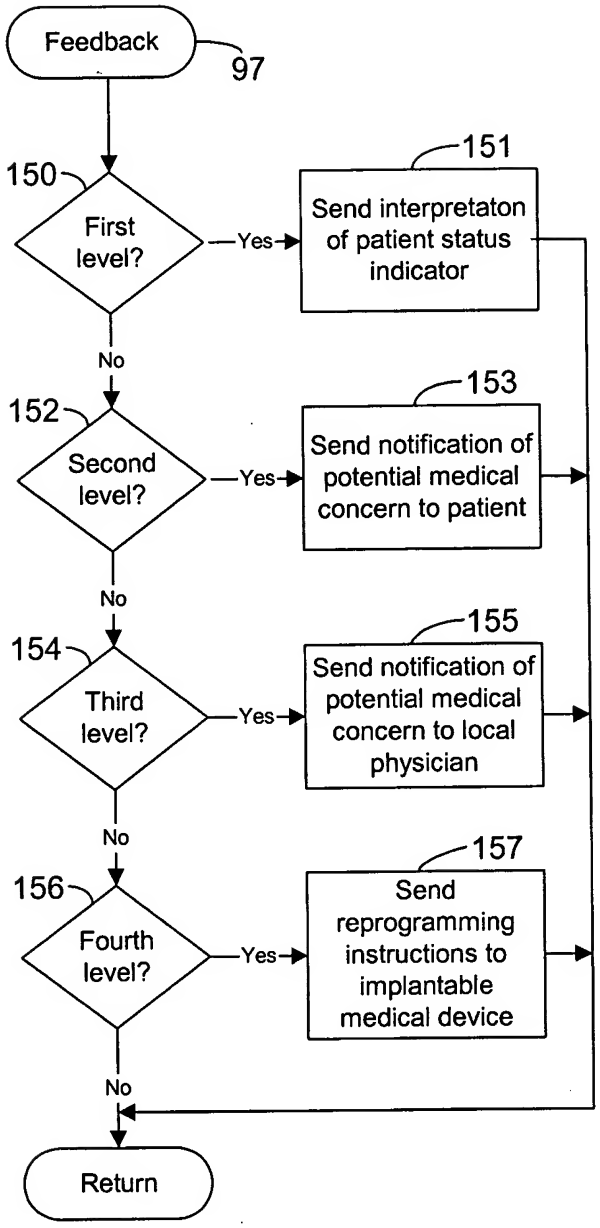

Feedback
97
150
First level?
Yes
151
Send interpretaton of patient status indicator
No
152
Second level?
Yes
153
Send notification of potential medical concern to patient
No
154
Third level?
Yes
155
Send notification of potential medical concern to local physician
No
156
Fourth level?
Yes
157
Send reprogramming instructions to implantable medical device
No
Return

Figure 12.

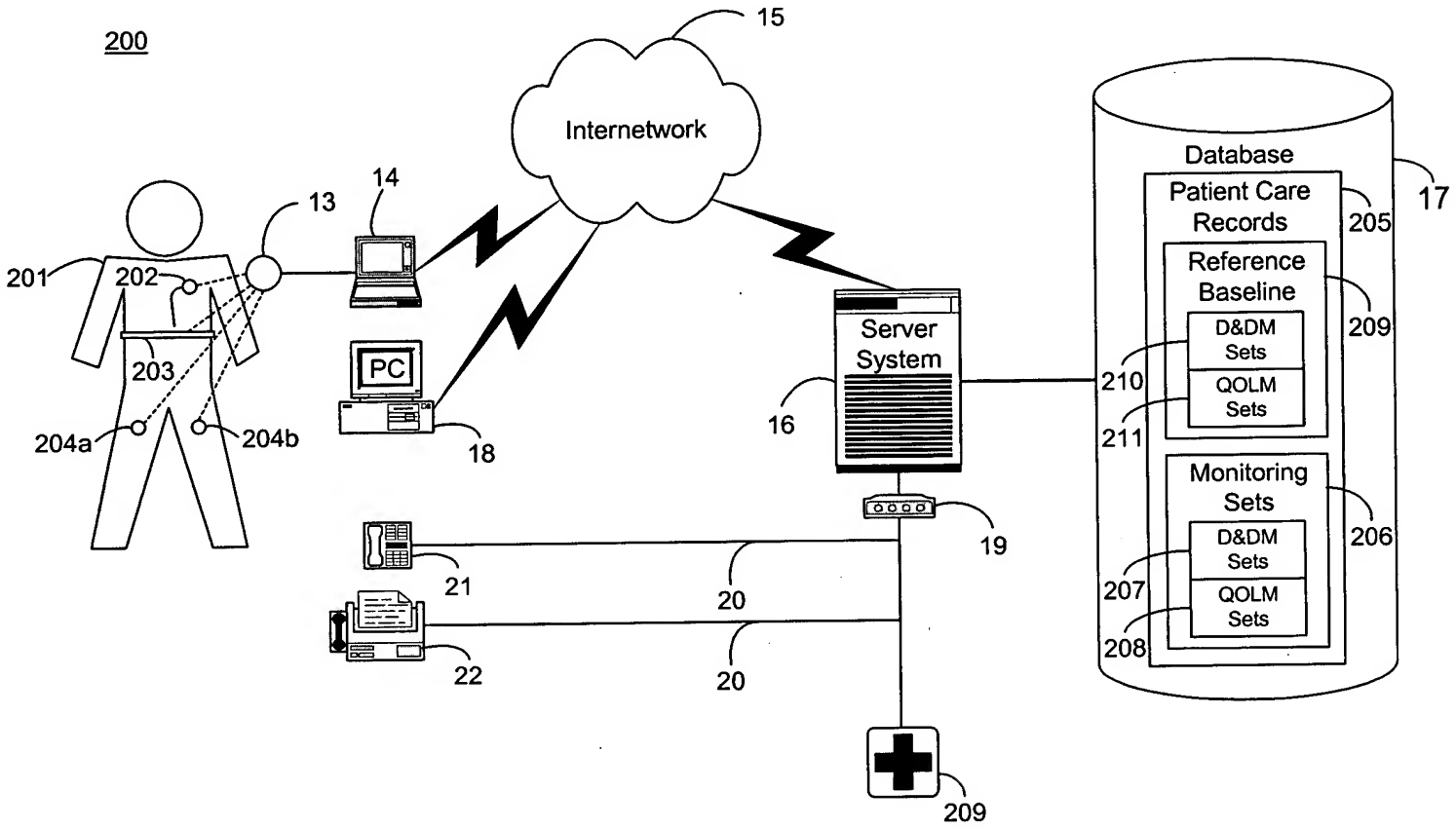

200
15
Internetwork
Database
Patient Care Records
205
17
Reference Baseline
209
D&DM Sets
QOLM Sets
210
211
Monitoring Sets
206
D&DM Sets
QOLM Sets
207
208
14
13
201
202
203
204a
204b
PC
18
Server System
16
19
21
20
22
20
209

Figure 13.

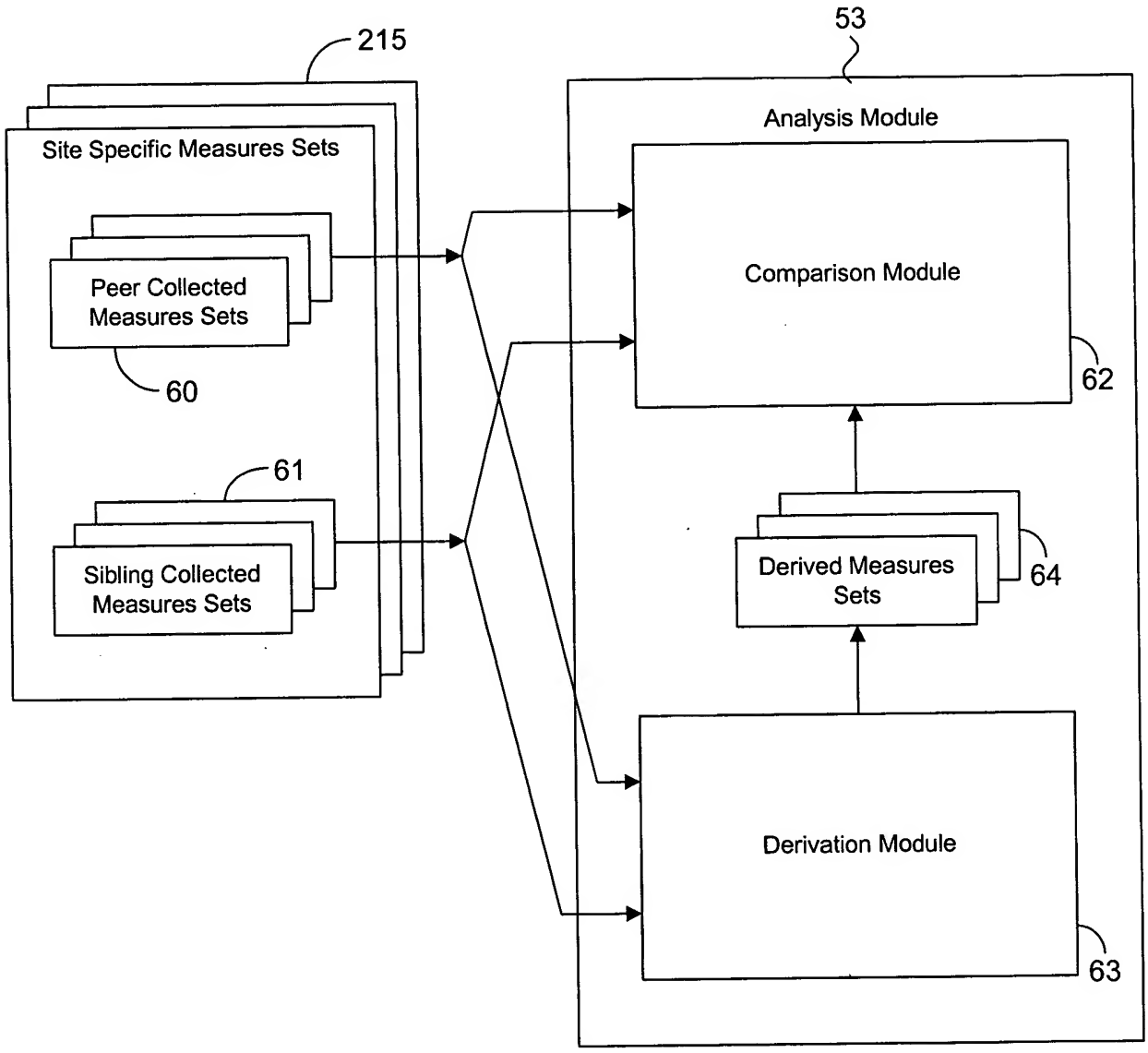

215
53
Site Specific Measures Sets
Peer Collected Measures Sets
60
61
Sibling Collected Measures Sets
Analysis Module
Comparison Module
62
Derived Measures Sets
64
Derivation Module
63

Figure 14.

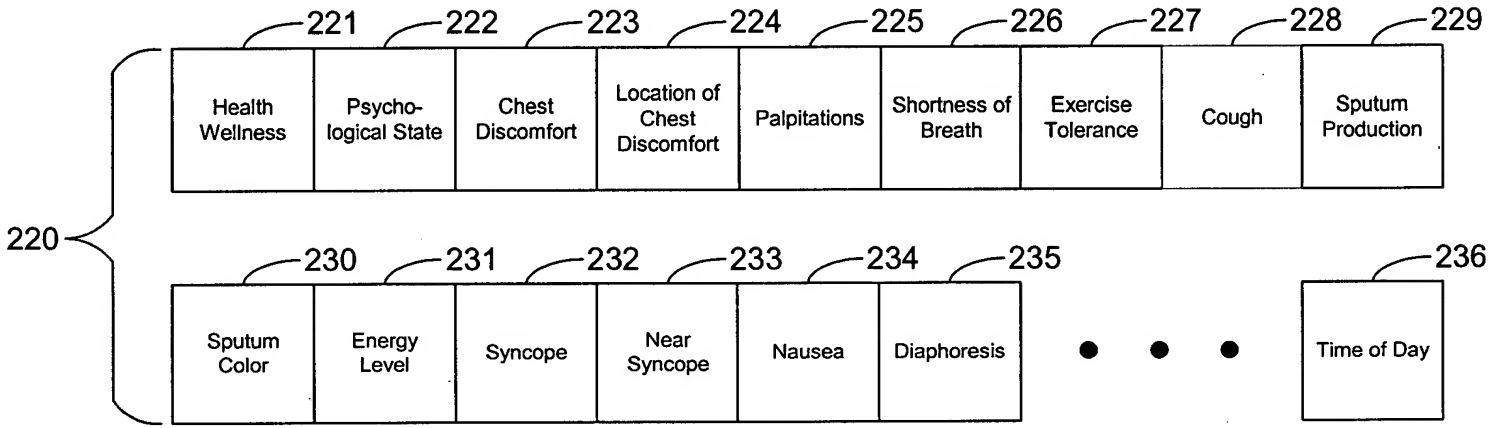

220
221
Health Wellness
222
Psycho-logical State
223
Chest Discomfort
224
Location of Chest Discomfort
225
Palpitations
226
Shortness of Breath
227
Exercise Tolerance
228
Cough
229
Sputum Production
230
Sputum Color
231
Energy Level
232
Syncope
233
Near Syncope
234
Nausea
235
Diaphoresis
236
Time of Day

Figure 15.

Patient 1

Set 0				Set *n*-2	Set *n*-1	Set *n*
Site *A*						
X_{0_A}	•	•	•	X_{n-2_A}	X_{n-1_A}	X_{n_A}
Y_{0_A}	•	•	•	Y_{n-2_A}	Y_{n-1_A}	Y_{n_A}
Z_{0_A}	•	•	•	Z_{n-2_A}	Z_{n-1_A}	Z_{n_A}
Site *B*						
X_{0_B}	•	•	•	X_{n-2_B}	X_{n-1_B}	X_{n_B}
Y_{0_B}	•	•	•	Y_{n-2_B}	Y_{n-1_B}	Y_{n_B}
Z_{0_B}	•	•	•	Z_{n-2_B}	Z_{n-1_B}	Z_{n_B}
Site *C*						
X_{0_C}	•	•	•	X_{n-2_C}	X_{n-1_C}	X_{n_C}
Y_{0_C}	•	•	•	Y_{n-2_C}	Y_{n-1_C}	Y_{n_C}
Z_{0_C}	•	•	•	Z_{n-2_C}	Z_{n-1_C}	Z_{n_C}

time →

Patient 2

Set 0				Set *n*-2	Set *n*-1	Set *n*
Site *A*						
$X_{0'_A}$	•	•	•	$X_{n-2'_A}$	$X_{n-1'_A}$	$X_{n'_A}$
$Y_{0'_A}$	•	•	•	$Y_{n-2'_A}$	$Y_{n-1'_A}$	$Y_{n'_A}$
$Z_{0'_A}$	•	•	•	$Z_{n-2'_A}$	$Z_{n-1'_A}$	$Z_{n'_A}$
Site *B*						
$X_{0'_B}$	•	•	•	$X_{n-2'_B}$	$X_{n-1'_B}$	$X_{n'_B}$
$Y_{0'_B}$	•	•	•	$Y_{n-2'_B}$	$Y_{n-1'_B}$	$Y_{n'_B}$
$Z_{0'_B}$	•	•	•	$Z_{n-2'_B}$	$Z_{n-1'_B}$	$Z_{n'_B}$

time →

Patient 3

Set 0				Set *n*-2	Set *n*-1	Set *n*
Site *A*						
$X_{0''_A}$	•	•	•	$X_{n-2''_A}$	$X_{n-1''_A}$	$X_{n''_A}$
$Y_{0''_A}$	•	•	•	$Y_{n-2''_A}$	$Y_{n-1''_A}$	$Y_{n''_A}$
$Z_{0''_A}$	•	•	•	$Z_{n-2''_A}$	$Z_{n-1''_A}$	$Z_{n''_A}$
Site *D*						
$X_{0''_D}$	•	•	•	$X_{n-2''_B}$	$X_{n-1''_D}$	$X_{n''_D}$
$Y_{0''_D}$	•	•	•	$Y_{n-2''_D}$	$Y_{n-1''_D}$	$Y_{n''_D}$
$Z_{0''_D}$	•	•	•	$Z_{n-2''_D}$	$Z_{n-1''_D}$	$Z_{n''_D}$

time →

Figure 16.

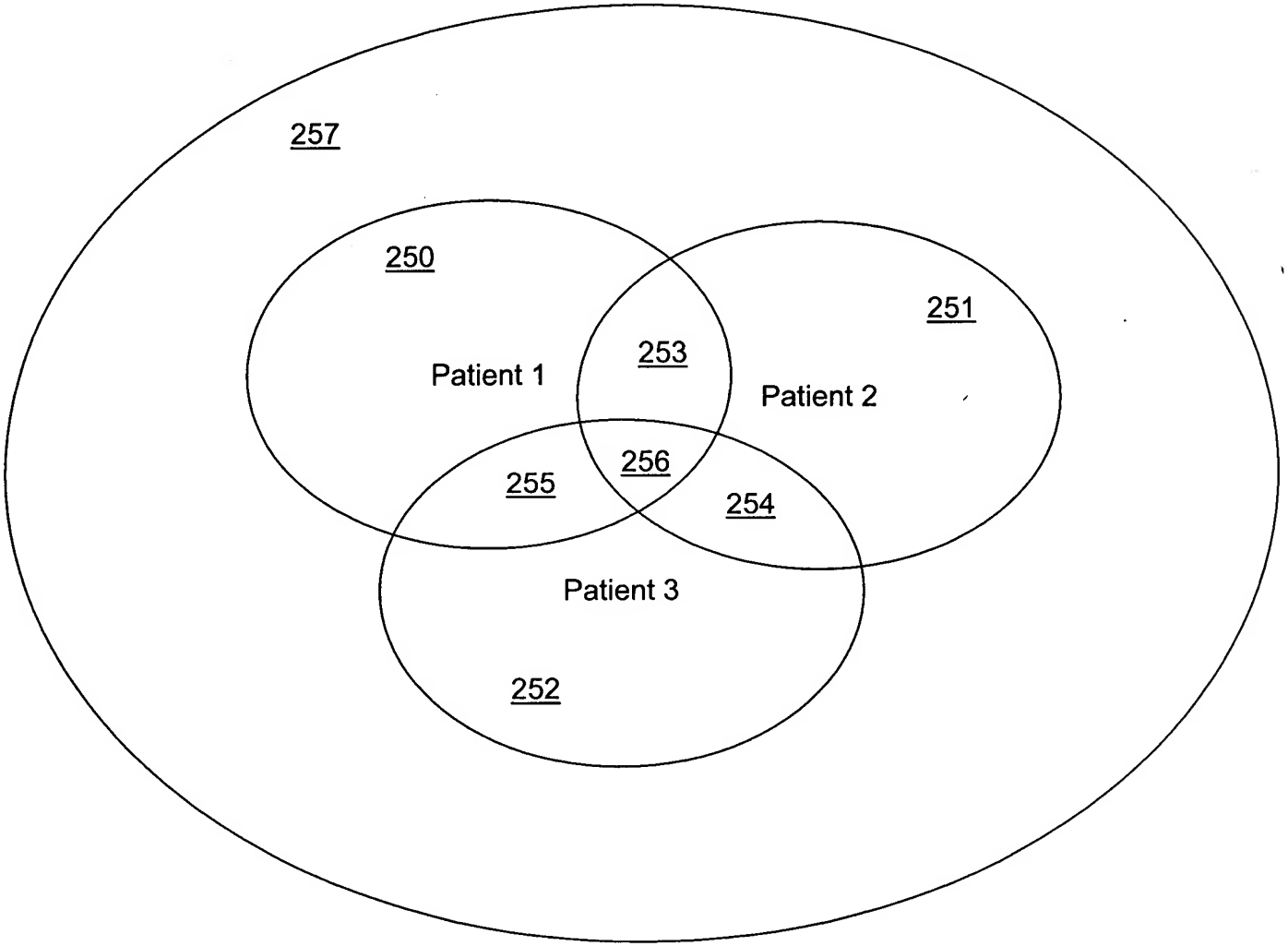


Figure 17A.

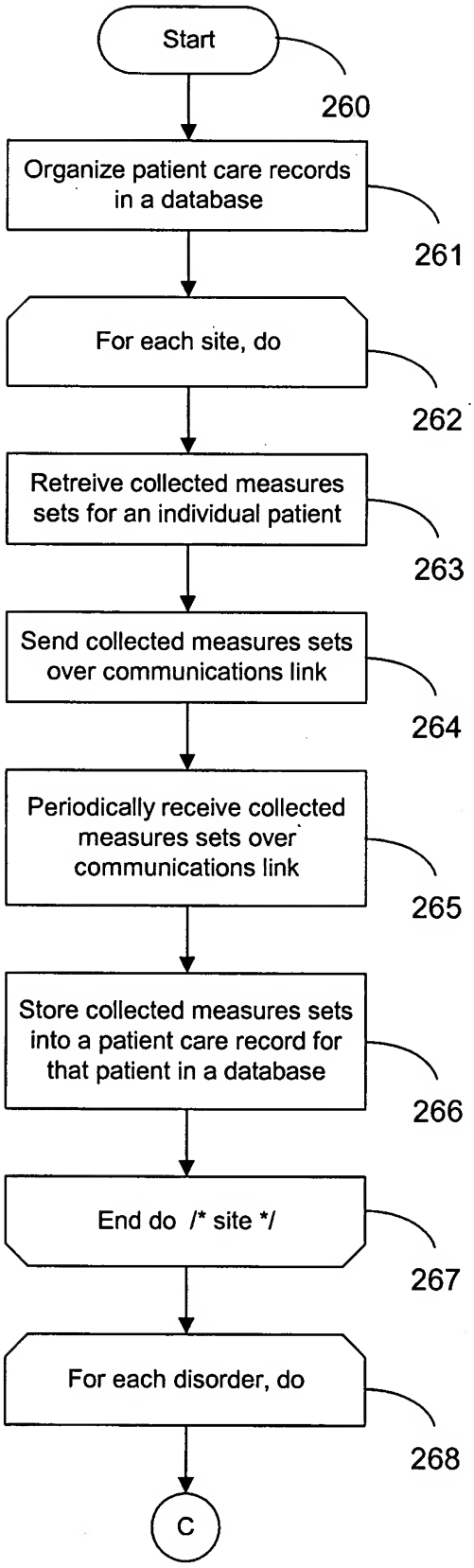

Start
260
Organize patient care records in a database
261
For each site, do
262
Retreive collected measures sets for an individual patient
263
Send collected measures sets over communications link
264
Periodically receive collected measures sets over communications link
265
Store collected measures sets into a patient care record for that patient in a database
266
End do /* site */
267
For each disorder, do
268
C

Figure 17B.

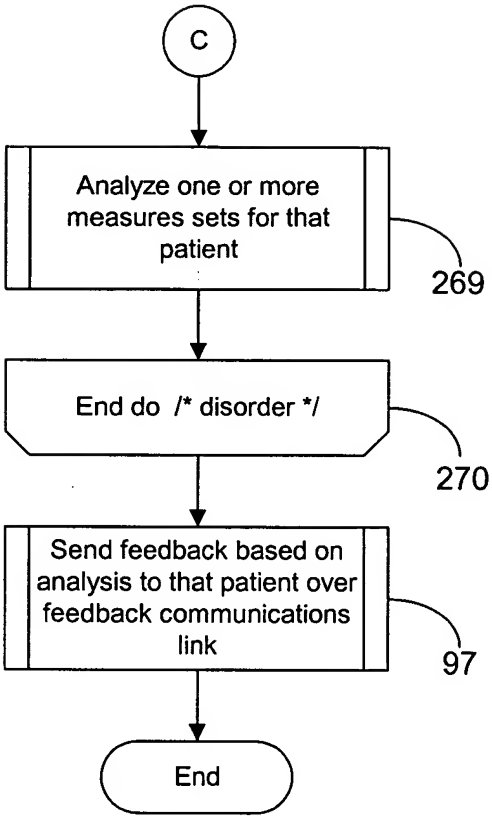
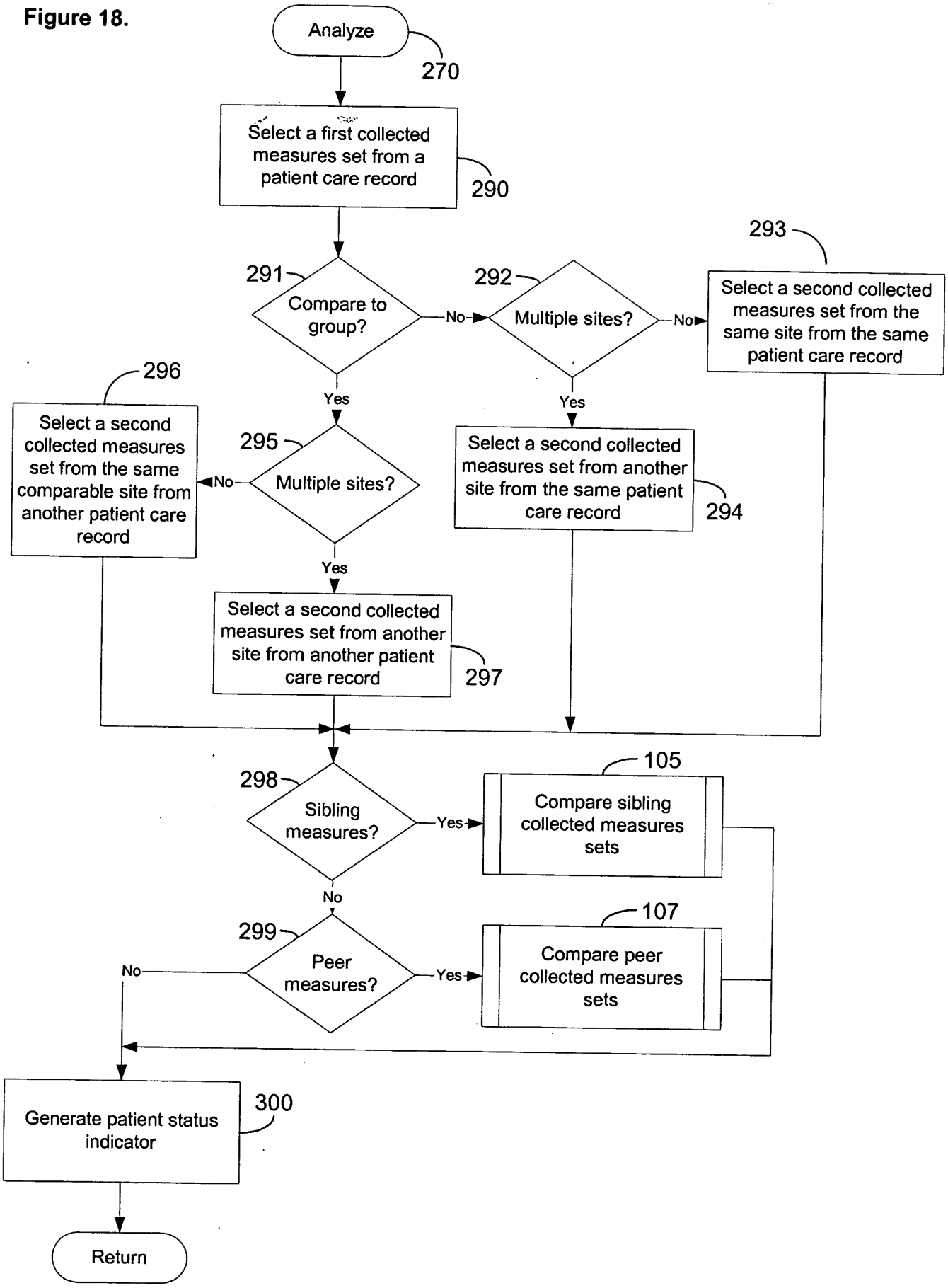

C
Analyze one or more measures sets for that patient
269
End do /* disorder */
270
Send feedback based on analysis to that patient over feedback communications link
97
End

Figure 18.


Analyze
270
Select a first collected measures set from a patient care record
290
291
Compare to group?
No
292
Multiple sites?
No
293
Select a second collected measures set from the same site from the same patient care record
Yes
Yes
296
Select a second collected measures set from the same comparable site from another patient care record
295
Multiple sites?
No
Yes
Select a second collected measures set from another site from the same patient care record
294
Select a second collected measures set from another site from another patient care record
297
298
Sibling measures?
Yes
105
Compare sibling collected measures sets
No
299
Peer measures?
No
Yes
107
Compare peer collected measures sets
Generate patient status indicator
300
Return